

HOW NEMATODES IN PLANT TISSUE ENTER AND
DISPERSE IN FLORIDA NURSERIES

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INTRODUCTION: One of the principal means by which phytoparasitic nematodes enter and become established in a nursery is by being present in plant tissue brought into the nursery operation. Some of the most important economic and regulatory nematode pests such as burrowing [Radopholus similis (Cobb, 1893) Thorne, 1949], cyst (Heterodera spp.), root-knot (Meloidogyne spp.) (fig. 1), lesion (Pratylenchus spp.) and foliar (Aphelenchoides spp.) (fig. 2), nematodes are embedded partially or entirely in plant tissue. Federal and state agencies encounter numerous tissue infestations by phytoparasitic nematodes in the routine examination of nursery plants in commerce.

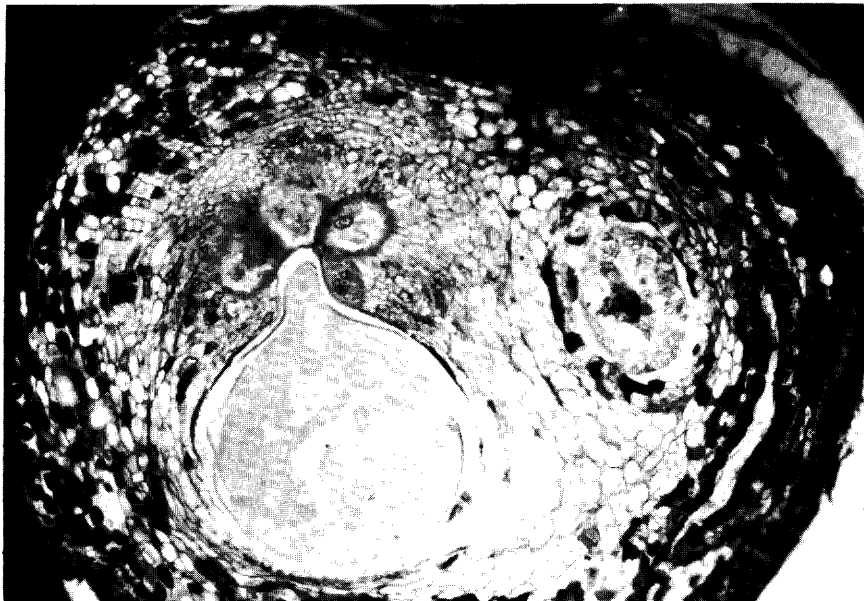


Fig. 1. Root-knot nematode (Meloidogyne sp.) inside an oak gall (Quercus sp.).

MODES OF ENTRY AND DISPERSION

INTRODUCING INFECTED PLANTS INTO A NURSERY: Many growers purchase container-grown plants and place them directly into the nursery operation, sometimes on benches occupied by pest-free plants. Nematodes in infected plant tissue will produce larvae that may migrate and infect other host plants in the nursery.

Preventive Measures: Growers should purchase pest-free plants whenever possible. Incoming plants should be kept in separate sites away from established nursery stock. Immersion for 10 min in water heated to 50 C will free hot-water-tolerant infected stock from nematodes.

Infected Landscape Plants: Some landscape plants such as bananas which are used for beautification may harbor burrowing nematode and other phytoparasites which can migrate to uninfected nursery stock.

Preventive Measure: Make certain that known hosts of serious nematode pests are not introduced into the nursery operation as landscape plants.

Native Trees: Native trees established on the nursery site may harbor nematodes injurious to nursery crops. In a North Florida nursery a large group of stunted chlorotic daylilies were found to be infected with dagger nematodes (*Xiphinema americanum* Cobb, 1913). Pecan trees growing adjacent to the infected daylilies were also infected with the same nematode. Dagger nematodes were not present in other areas of the field.

Preventive Measure: Do not locate nursery crops too close to native trees.

Dispersal by Plant Propagation: Nematodes have been dispersed by infected cuttings, layering procedures, and in bulb, tuber, and corm stock used for underground propagation.

Preventive Measure: Take cuttings above the soil line from clean plant parts. Never include soil or roots in propagative pieces. Underground bulbs, corms, rhizomes, and tubers can be freed of nematodes by immersion in hot water using the correct time and temperature specified for the plant.

Dispersal in Crop Residues and Green Manure: Nematodes survive very well in crop residues and green manures. Stem and bulb nematodes have survived in flower debris, petals, and pods.

Sanitary Procedures: Do not use green manures indiscriminately. Crop residues should be removed or treated with steam or chemicals prior to planting a new crop.

Dispersal by Seed: Seed gall, and bulb and stem nematodes survive in seeds, and can revive and infect new seedlings. Nematodes have also been known to survive while attached to the seed surface.

Sanitary Procedures: Use clean seed from a source known to be free of seed parasites. Seeds can also be disinfected with hot water, but this is rarely done.

Conclusions: Pest-free stock grown under a sanitation program should never be exposed to plants or any plant parts for which the pest status is unknown. New plants entering a nursery should be isolated until they can be determined free of plant damaging pests.

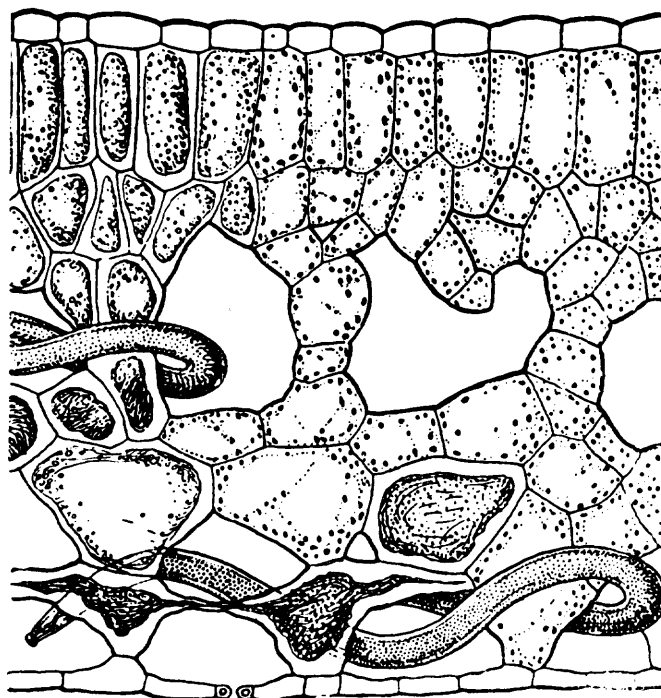


Fig. 2. Foliar nematodes [*Aphelenchoides ritzemabosi* (Schwartz, 1911) Steiner, 1932] inside a Dahlia leaf. (After Weber)